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AMERICAN DYESTUFF REPORTER

Vol. III, No. 10

Sept. 2, 1918

IN THIS ISSUE

England Prepares to "Carry On"

Some Special Methods of Bleaching
By M. Tailfer

Dyestuffs: Part III
By Dr. Louis J. Matos

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"Circulated Everywhere Dyestuffs are Used"

Vol. 3 New York, September 2, 1918 No. 10

ENGLAND PREPARES TO "CARRY ON"

With the First Phase of Their Struggle Over, British Manufacturers Take Steps to Protect Their Future

IT is becoming increasingly evident as time goes on that there is in England a growing uneasiness regarding the effect of the rapidly expanding American dye industry upon the future supremacy of the English markets.

Perhaps this feeling should hardly be alluded to in the above manner, for it is as yet too vague and intangible to be seized upon and defined in any such arbitrary fashion. But it exists. One has only to scan the pages of recent English trade literature in order to find here and there the faint wisps of smoke which indicate so surely the hidden but smouldering conflagration beneath the surface.

There should, however, be no mistakes made as to the exact nature of this feeling. Such would be most unfortunate. Let the reader understand, once and for all, that it is perfectly friendly and that it will remain so. Indeed, it might be said that if England were compelled through force of circumstances to see her dye industry, and, in consequence, her textile industry as well, in the hands of an outsider, she would far rather have it in the hands of this country than in any other—and, of course, *any* country at all, almost, rather than Hunland. But she does not propose to let this occur; that is all. And, at length, after the first mad frenzy to lay plans for turning out acceptable colors following the cataclysm of 1914, she takes serious thought as how best to prevent this.

The United States, then, is literally coming to be viewed in England as a rival of Germany in the future coal-tar chemical industries of the world. The difference in the feeling toward the two countries is, it goes without saying, limitless, and not to be spoken of in the same breath. But, shorn of all personal considerations, this is the fact which stands out—and it is only natural. There has been too much said of the relation of the dyestuff and explosive industries already for us not to appreciate why it is altogether fitting and proper that this should be so, and as exponents of the premise that the world must be made safe for

democracy we should regard it as desirable that all our allies be adequately equipped to defend themselves and all of us in case the occasion ever again arises.

As everyone knows, the tail of the British lion, so far as synthetic colors went, received a most excruciating twist in 1914 at the hands of the Teutonic Dye Ring. This was entirely analogous to our experience over here, and, in common with others. Leo yelped savagely, looked four ways at once, and for some months was seen to flounder about madly in an attempt to get the kinks out of his caudal appendage. Then sanity prevailed and comparative order was restored as English dye chemists went methodically to work to build up slowly and painstakingly the fundamentals of the industry. From then on the march of their progress has been steady and their scientific advance practically unchecked, until, at the present writing, they are at last in a position to draw breath, as it were, and look about them to get a better perspective on the situation and its future aspects.

And one of the first results of this interlude has been to see that, unless provisions were made to offset us, the United States might some day occupy the position in the English dye markets which Germany once did. And while there is no doubt but that such an arrangement would have been an entirely amicable one, it was not to be desired—nor should we ourselves desire it, for there is plenty of room for both in foreign fields.

Announcement has now been made that an approach to the fulfillment of the promise made of governmental assistance to the British dye industry has taken the form of grants for research. These include £1,000,000 for this purpose, which represents the first installment of a total sum of £2,000,000 to be provided for the purpose of assisting, by way of loans, etc., the expeditious development of the industry by our English cousins. The total expenditure is to be spread over three years, and divided as follows: £1,250,000 in loans at not less than 1 per cent above banking rates, with a minimum of 5 per cent, repayable in twenty years or earlier if the profits of the manufacturers are more than 9 per cent; £600,000 for contributions in aid of extensions of factories and buildings, and £150,000 to be expended in aid of research. The vote for this step was taken in the House of Commons last month.

In connection with this, the *Dyer and Calico Printer* remarks that "the offer of the Government to extend financial aid to dye firms in addition to those concerned in the amalgamation scheme, for the purpose of research work and extensions, is so tempting that it was pretty certain that overtures would be made to take advantage of it. In their initial stages these overtures are not proclaimed from the housetops, but one firm has had the courage to announce that it has entered into negotiation for aid. Mr. H. N. Morris has interviewed the president of the Board of Trade, and if the Government are as good as their word interesting developments should follow. It may be noted that Mr. Morris is dubious as to the full success of the combination of the two big dye firms. It is a question, as he sees it, of pitting all that is represented by a capital of only two or three millions against the enormous combination of chemical and dye interests in Germany, and also in the United States. But here we are back again at problems that cannot be solved now—problems as to the precise bases of peace and also of the control of raw materials. We cannot, between now and the termination of the war, build up an organization powerful enough to meet competition and combinations on a pre-war foot-

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ing, but the building process can be going steadily on, and the furtherance of research work is one of the sure means of meeting our coming trade responsibilities. That is one reason why the Government offer should attract more takers."

From the foregoing can be gained a fairly good conception of the present British attitude toward the dye situation. It is not unlike our own. It is not, for one thing, quite so sanguine as it once was. With the recent developments on the Western front, it is beginning to be felt that time, the most valuable ally of the industry, is getting comparatively short, when one considers the complexity of the task which yet remains, and steps must be taken now to protect the industries of both countries while their growth continues.

Speaking of a discussion between Roscoe Brunner, of Brunner, Mond & Co., and H. N. Morris, of the firm which bears his name, who are at variance over the proposal to carry on the British chemical trade in well-defined divisions, our English contemporary cites the fact that these two gentlemen have this in common, they are both anxious not only that the industry should hold its own after the war, but that it should contribute actively and positively to the development of the technical industry of the British nation. "That," it continues, "differences notwithstanding, is a good starting point for attaining some measure of common understanding. The chemical trade will have a great fight for it in the coming days, and there will have to be some organization to meet that fight. The Germans, who are betraying more anxiety than ever to get back to industrial times—which means that they are preparing, if not already prepared—are, as we all know, well organized, and there is also the fact that the American combinations will have to be reckoned with in a greater degree after the war. Whether the division of the chemical trade into four sections will help matters, as Mr. Brunner thinks, or will result in overlapping and chaos, as Mr. Morris declares, is a point not to be settled by abstract discussion. Nor can it be settled at this stage even by practical men. Much depends in this, as in other affairs, on the kind of end the war makes. The one thing that emerges clearly is that the governing spirits of these concerns are awake to the fact that post-war conditions will have to be met by new means."

There are other examples from which we might quote, but the above two are fairly eloquent of the thoughts which are now uppermost in the British mind. It is the writer's conviction that if there are at present any who regard the English dye markets in the light of easy picking in the years to come, they will do well to abandon the idea. It will be best for all concerned that both England and America have strongly entrenched and self-contained coal-tar chemical industries, and that the two countries work as one to further this object. What rivalry there is can be in the matter of the more highly com-

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plex and difficultly obtainable shades —the pampered aristocrats of the industry, so to speak—and in the foreign markets of China, South America and elsewhere.

SOME SPECIAL METHODS OF BLEACHING

As is well known, lime lyes, carbonate of soda, caustic soda, with chemicking and souring, form the basis of the bleaching of the textile fibers of vegetable origin. Besides these classic methods there are, however, other methods and other products employed in certain particular instances, which are at least of some interest. In a contribution on the subject to *L'Industrie Textile,* M. Tailfer discusses these exceptional methods, especially the use of silicate and perborate of soda in bleaching. He recalls the Watremez process of preparing vegetable fibers for facilitating their bleaching. This process consists in treating the natural coloring matters of the fibers by those metallic salts of which the corresponding oxides are but little soluble in water, and excluding the salts containing an alkaline metal as the only metal, excepting when it is necessary to constitute an alkaline medium. This treatment of the fiber eliminates the greater part of the natural coloring matters, and makes those not eliminated easily destructible by the bleaching agents. An example is given: 1. The boiling out—To prepare a liquor of 1,000 litres, 10 kilos. of crystallized alum and 5 of carbonate of soda are dissolved in water; when the disengagement of carbonic acid is ended and solution effected the precipitate formed is dissolved by the addition of 20 litres of caustic soda (60 deg. Tw.), and then the needed amount of water. The material to be treated is entered and the bath heated; decolorization commences rapidly and before the boil is reached; boiling is continued for about two hours, at the end of which the liquor is allowed to cool, by preference with the material still in it. The material is next washed in running water or treated with water slightly acidulated by hydrochloric acid to eliminate the excess of alkali. Nothing is to be gained by operating under pressure in a closed kier, since this mode of boiling-out gives a loss in weight which is avoided by boiling without pressure. After the boiling operation a large part of the coloring matters has been eliminated, and any that remains is in combination with the metal; if the oxide of this metal is not colored, and if the fibers treated are easy to bleach, the bleaching may be proceeded with immediately. 2. Attacking the metallic salts existing on the fiber after the boiling-out—The material is treated with agents capable of modifying these metallic salts; as far as aluminium is concerned, good results are obtained by means of sulphuric acid (0.2 to 0.3 per cent).

Other compounds may also be used for this treatment, such as the alkaline sulphides; in this case it is well to destroy, with an acid, the sulphide compounds so formed in the fiber. In general this treatment suffices for the production of a good white after a few hours' impregnation in the ordinary chemic liquor of medium or low strength. Yet for certain fibers usually rather difficult to bleach it may be necessary to give a second treatment with the metallic salts, that is, renew the attack, before proceeding to the chemicking, on the remaining natural coloring matters, after having removed the metal used in the first operation. For instance, it is convenient to treat with a 0.6 to 1.2 per cent solution of bisulphite of soda along with 0.2 to 0.4 per cent of hydrochloric acid to dissolve a metal such as copper, chrome, or manganese; then rinse in cold water, and pass through the chemic liquor as previously. It is to be remarked that by treating the fiber with a salt of copper or of chrome on azure good white re-

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sults, the azure tone being easily caused to disappear by the action of all bodies capable of dissolving the corresponding oxides, such as nitric acid. If manganese salts have been employed the treated fiber is colored yellowish, and it is therefore necessary to prolong the action of the chemic until the tint is quite uniform on the material, and then the oxide of manganese may be removed, for instance, by sulphurous acid. The Watremez process presents the advantage of being very economical, since the manipulations are reduced to the minimum, the materials employed are less costly, and the treatment rapid. According to the author of the process, the white obtained is very pure and the loss in weight of the material treated insignificant, because only the natural coloring matters of the fibers are attacked to the exclusion of the cellulose supplying them.

Silicate of Soda.—Lyes of silicate of soda find frequent employment in the boiling-out of cotton fabrics and their bleaching. It has been asserted that the action of commercial silicate of soda on the cotton fiber is in all points comparable to that of caustic soda. The detergent property of commercial silicate of soda is due in effect to its caustic alkalinity, since silicate may be regarded in sum as nothing more than a colloidal solution of silica in caustic soda, in which, under certain conditions, the salt and the gel preserve their respective properties. In 1906 Bacon succeeded in preparing a crystallized silicate of soda of definite composition. Experience has demonstrated that the detergent properties of crystallized silicate of soda are far higher than those of ordinary silicate. Linens from the hospitals, and soiled or infected cloths, can only be treated efficiently and in hygienic conditions by this product, which has astonishingly antiseptic properties. Under its action the fiber shrinks slightly and acquires strength. The presence of silica exercises a true mechanical action as a dirt remover. In Normandy a mixture of carbonate and silicate of soda has been used with very good results as a lye in the bleaching of linens.

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Crude Carbolic Acid, 25-30% 2nd Quality
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We invite inquiries for the various products listed above, but would call attention to the fact that on some of these items present heavy contract obligations make immediate offerings impossible.

The Barrett Company

17 Battery Place *Chemical Department* **New York, N. Y.**

AMERICAN DYESTUFF REPORTER
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Pointed solely toward the welfare and growth of the American Dyestuff Industry. Unbiased contributions appreciated

A. P. HOWES, Editor and Publisher

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Advertising rates on request.

CONCERNING OURSELVES

In our issue of August 12 we described at some length the part which we believe publicity must play in securing the permanent establishment of the American dyestuff industry. In particular we mentioned the scope of the dyestuff trade publications and outlined the plans which we have in mind for the REPORTER.

As we pointed out at that time, it is self-evident that before a trade publication can become a weighty factor in its field it must have the hearty co-operation of its readers and this co-operation must be evidenced by paid subscriptions.

During the past two weeks we have been asking those of our readers who have been receiving the REPORTEP without charge to co-operate with us to the extent of entering their subscription for one year from January 1, 1919, at the regular yearly rate of $3.00.

This seems to us an eminently fair proposition. When we began publication of the REPORTER, on October 1 of last year, we announced that it would be distributed to every consumer of dyestuffs in the country for a reasonable period without charge. This probationary period is now past and within a very short time we shall be compelled to eliminate our complimentary list altogether. It seems to us only right that those who have received the REPORTER each week for eleven months without charge should be willing to pay for it during 1919—particularly when we offer to continue the free distribution up to the first of the year.

We are very glad to say that the response to the letters which we have been sending out has been most satisfactory, and we wish to take this opportunity to thank those who have sent in their subscriptions. It has been impossible to write an individual acknowledgment in each case, but we wish to assure all who have responded that each subscription was appreciated to the full.

There are still a great many, however, who have not acknowledged receipt of our letters, and these we would urge once more to favor us with their subscriptions. Bear in mind the fact that the chief mission of the REPORTER is to promote everything which is for the good of the American dyestuff industry, and in particular to oppose at every turn the re-establishment of the German influence in this country. Your subscription will forward this work. It is a patriotic cause and worthy of your wholehearted support. There is a coupon at the bottom of this page. Won't you sign and return it to us to-day?

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Announcement has been made by the Cassella Color Company, of New York, that the capital of this firm has been reduced from $50,000 to $15,000.

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DYESTUFFS

By Dr. Louis J. Matos

We give herewith the third installment of Dr. Matos' paper as it appeared in the *Journal of the Franklin Institute*, and which, for the benefit of our readers, we are reproducing in four parts.

Part III

At this point the lecturer directed attention to a number of illustrations, several of which are printed herewith. The first was a diagram of a coal-tar

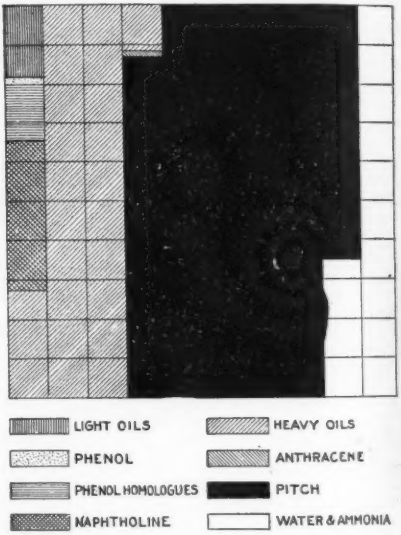

Figure 1

tree, showing the general relationship that the finished dyestuffs have toward coal tar. By this tree we immediately grasp the idea that upon the destructive distillation of tar certain prime raw materials are obtained, which, when subjected to further chemical treatment, are converted into the so-called intermediates that the dyemaker employs for the production of the finished dyestuff. Coal tar itself is a by-product of the destructive distillation of coal, either from the illuminating gas-making process or from other operations where tar is recovered. During the process of distilling coal, illuminating gas is obtained, and during the operation of washing this gas, ammonia is recovered. The

residue remaining in the gas retorts is coke. When coal tar itself is subjected to destructive distillation, it breaks up into a number of raw materials, including benzol, carbolic acid, cresoles, naphthalene, anthracene, heavy oils, and leaves a large residue of pitch, the exact composition of which is known to vary, but which is still a subject of fruitful investigation to chemists.

The diagram reproduced (*Fig.* 1) shows graphically the average percentage composition of coal tar. Each square represents 1 per cent. The small amount of phenol or carbolic acid actually in tar is indicated, as well as the small amount of anthracene. It is this small amount of anthracene that carries a small, though available, amount of carbazol, to which I have previously alluded.

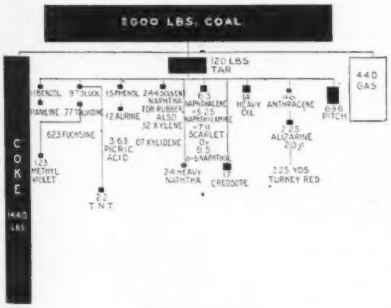

FIGURE 2

Figure 2, herewith, is a diagram showing the average quantity of distillates obtained from 2,000 pounds of coal, together with the quantities of a few of the important dyestuffs which some of these distillates produce.

Figure 3 shows the sequences of events for the conversion of benzol and toluol into the well-known dyestuff magenta or fuchsine.

Figure 4 represents the chain of operations necessary for the conversion of the primary raw material—naphthalene—into naphthol yellow.

Figure 5 is of particular interest, and shows graphically the so-called aniline process for the manufacture of synthetic indigo, from which we see that there are three primary methods having this object in view, all of which, however, aim to produce phenol-glycene, which is then subjected by one of three

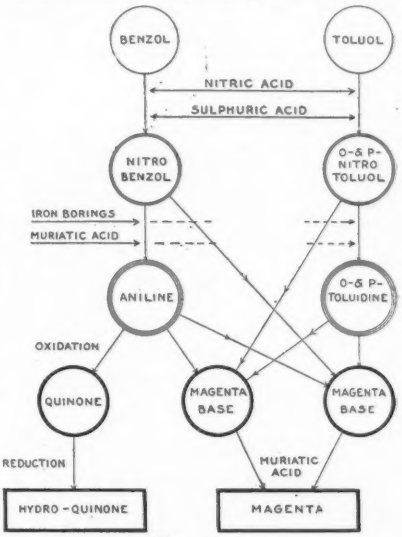

FIGURE 3

processes, according to patent limitations, into indoxyl, and as this latter product is then, by the oxidizing influence of the air, converted into indigo.

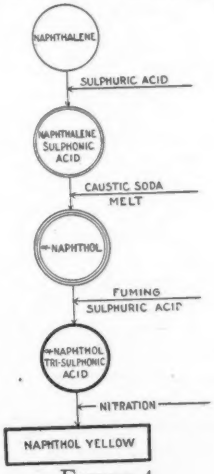

FIGURE 4

The so-called naphthalene process is shown in *Figure* 6. This process has for its object the conversion of naph-

thalene into indigo, and is known as the phthalic acid process. The main product obtained is phenylglycine-o-carboxylic acid, which is fused with caustic soda, producing indoxyl, and this latter by oxidation is changed into indigo.

These several indigo processes which I have shown are rather complex, but this complexity need not stand in the way of well-directed students in our organic laboratories for undertaking the work under competent directors.

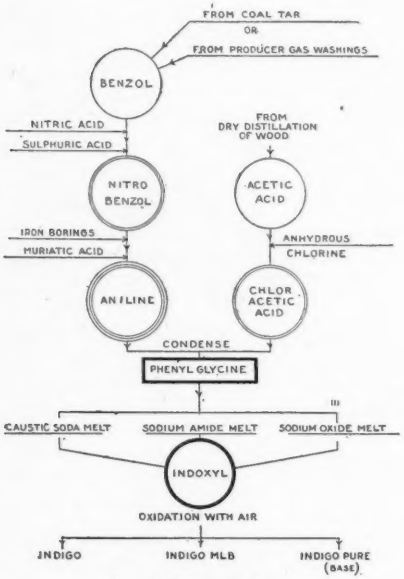

FIGURE 5

There is not the slightest doubt but that investigating students, equipped with personal laboratory manipulating ability and supplied with the necessary patent literature, should be able to carry out, first, upon a laboratory, and, second, upon a semi-factory scale, every operation involved in the production of this most important coloring matter, and the practical technical information thereby gained would be of the greatest value for further industrial research.

There were also shown a succession of diagrams illustrating graphically the manufacture of naphthol black, which includes the manufacture of beta naphthol, the conversion of beta naphthol into R-salt and G-salt, which are formed simultaneously and separated finally, as shown in *Figure* 7, and the

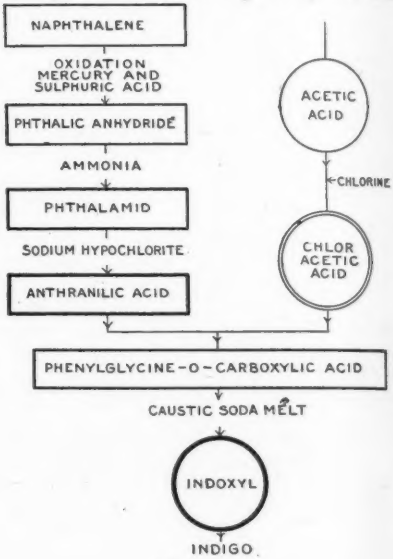

FIGURE 6

conversion of the R-salt into the completed dye.

The manufacture of cyanol was illustrated by a succession of slides showing the production of crude benzaldehyde, the conversion of that substance successively into nitro-benzaldehyde, amido-benzaldehyde and oxy-benzaldehyde.

There were also shown illustrations of the process for the production of ortho-nitro-toluol, its conversion into ortho-toluidine, and the ethylating of the same, and, finally, as shown in *Figure* 8, the condensing operation and finishing of the completed dyestuff.

From an inspection of the several

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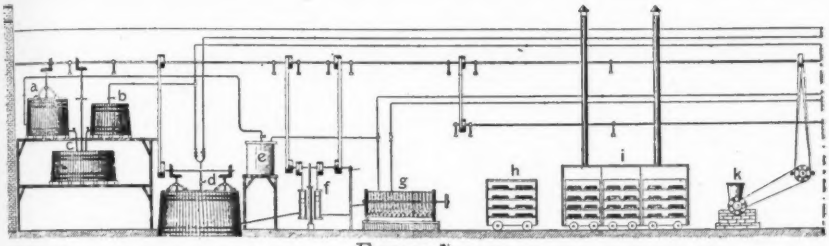

FIGURE 7

a, Vat for diazotizing the b-naphthylaminedisulpho acid; *b*, vat for dissolving the a-naphthylamine; *c*, vat for producing the amidoazonaphthaline-disulpho acid, and for diazotizing the same; *d*, vat for combining the diazoazo body with R salt; *e*, vat for producing R salt solution; *f*, duplex pump; *g*, filter press for the finished naphthol B; *h*, truck for the moist dye; *i*, drier; *k*, grinding mill.

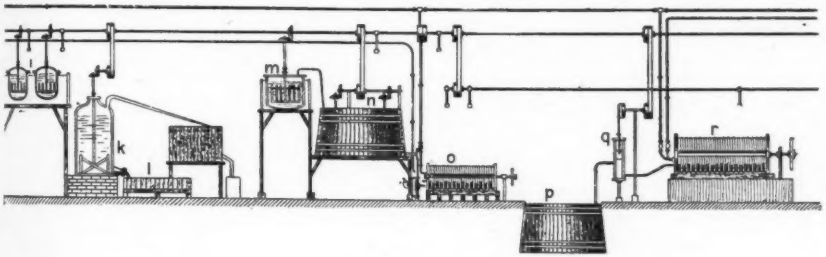

FIGURE 8

i, Kettles for condensing oxybenzaldehyde with mono-ethyl-o-toluidine; *k*, still for recovery of unconverted ethyltoluidin; *l*, filter for the condensation product; *m*, sulphonation kettle; *n*, vat for diluting and oxidizing the sulphonation; *o*, filter press for lead sulphate; *p*, neutralizing, and salting-out the dyestuff; *q*, filter press for the finished dyestuff (cyanol).

figures we are impressed with the fact that dye manufacturing is not entirely chemistry, but is an industry that depends very largely upon the ability of the chemical engineer specially trained in dye making and dyeworks equipment. After the preliminary outline of the process has been worked out, the results of his labor are taken up by others in the plant and gradually brought to manufacturing perfection, and it depends in a great measure upon the commercial importance of the dye in comparison with dyes known prior to this discovery. If it possesses properties of fastness not assured by the older dye, its field of usefulness is thereby enhanced.

(*To be concluded*)

NOTES OF THE TRADE

This is undoubtedly an opportune time to introduce synthetic indigo and aniline dyes from the United States into China, according to a recent report of U. S. Consul Myrl S. Myers, writing on trade conditions at the port of Swatow. According to his advices, manufacturers of this country shipped only $89,570 worth of dyestuffs thither last year, as against $122,768 in 1916. The principal dyes shipped to that port have always been those mentioned, but neither was included among those sent in 1917.

With a capital of $100,000, the Noel Color & Chemical Works, of Manhattan, has been incorporated under the laws of New York State.

Creditors of the American Synthetic Color Company will have until September 3, 1918, in which to file their claims with Receiver John W. Throckmorton, 372 Atlantic street, Stamford, Conn. The concern recently became defendant in an action brought by the Getman & Judd Company.

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Coloring Matter in Cottonseed Oil

The properties of the coloring matter of cottonseed oil have been studied by a number of patentees of processes for its removal during refining. The color has been called "gossypol" and has the empirical formula $C_{13}H_{14}O_4$. It is insoluble in water but is readily soluble in alcohol, benzene, other organic solvents and dilute salt solutions. It is insoluble in dilute acids and strong brine solutions but is readily soluble in boiling acetic acid and aqueous alkalies.

A very large number of methods, based on the solubility of the coloring matter in aqueous alkali have been suggested for its isolation or removal, but none has received such universal approval as the caustic soda method. Normal sodium carbonate, as it has little saponifying action on oil during the refining process, has been suggested. Sodium chloride has been used with caustic soda, to salt out the compound formed, but though the graining out is better, salt interferes with the removal of the color. The resultant oil is found to be poorer in quality and deeper in color.

Alkali silicate, and also metal substituted bases with an alkali reaction, have been proposed and one patentee uses with alkali silicate substances which produce soap, such as hydroxides, carbonates and other alkali compounds. Another process first neutralizes with caustic alkali and then fixes the coloring matter with silicate. K. H. Vakil has tried this method repeatedly and found that the foots settle down rapidly, retaining very little refined oil, but the refined oil is poor and similar to that obtained by the salt-caustic soda process.

A recent patent employs either an inorganic absorbent material such as fuller's earth in presence of an electrolyte, or a fibrous vegetable matter impregnated with a slight excess of alkali to neutralize the free fatty acids. The cellulose converts the colloidal material, containing precipitated color and albuminoid matter, into a mass which is easily separated from the refined oil by filtration.

RECOVERY OF SULPHUR DYES FROM WASTE LIQUORS

Comparatively recent practice has allowed the dye content from waste liquors produced in commercial dyeing with sulphur colors to become lost, with the result that the net cost of dyeing with such colors has included the cost of the entire dye content, that unappropriated and lost as well as that taken up by the goods.

Thomas Forsyth, of New Haven, Conn. (Amer. Pat. 1,242,676), has devised a process for the recovery, for reuse, of the unappropriated or unused dye content from these waste waters.

The primary feature of the process is the neutralization of the waste liquors by the use of sulphuric acid or acid sulphates such as nitre cake, with the resultant precipitation of the sulphur dye held in solution by sodium sulphide.

The precipitated dyestuff is collected on screens of wire gauze and can be used in fresh dyeings. The filtrate is no longer capable of coloring the streams into which it may be led, or of emitting unpleasant odors and destroying animal life in the water.

With a capital of $10,000 the Eastern Dyeing Corporation has been incorporated under the laws of New York to manufacture yarns and wearing apparel and to carry on a general dyeing and bleaching business. The incorporators are Alfred Arfstrom and Samuel L. Snyder, New York, and Orville H. Hugard, Roselle Park, N. J.

IMPROVEMENT IN THE SYNTHESIS OF INDIGO

In the evolution of of Heumann's method for the synthesis of indigo the yield of indoxyl from phenylglycin or phenyl-glycocol was materially heightened by various modifications of the original flux. At first the glycin was transformed into indoxyl by fusion with sodium hydroxide. Later, a mixture of sodium and potassium hydroxides was used. The reaction was found to be more perfect if quicklime was added to the mixture. Good results were also obtained by adding to the mixture, instead of quicklime, either metallic sodium or sodium oxide. All of these successive modifications were protected by patent.

Lee H. Cone, of Misland, Mich. (Amer. Pat. 1,211,413, Jan. 9, 1917, reissued Sept. 25, 1917), assignor to the Dow Chemical Co., finds that the yield of indoxyl in this reaction can be materially increased if these two modifications are used together.

He fuses 15 parts of phenyl-glycin potassium salt with 60 parts of potassium hydroxide, 40 parts of sodium hydroxide, 15 parts of quicklime (calcium hydroxide) and 3 parts

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of metallic sodium. Working with these proportions, the yield of indoxyl varies from 65 to 75 per cent of the theoretical.

The resultant indoxyl is transformed into indigo by oxidation with an air blast.

NOTES OF THE TRADE

Italy Wants Dyestuffs

A large wool spinning and weaving concern in Italy desires to secure samples preparatory to a wholesale purchase of dyes for wool in locks, cotton in locks, woolen fabrics, and fabrics of wool and cotton. Strong colors for dyeing the wool and cotton in locks and dyes capable of resisting light for the weaves of wool and half-wool are required. Terms will be cash against documents. Correspondence should be in Italian and references given. Those interested should communicate with the Bureau of Foreign and Domestic Commerce at Washington and mention trade opportunity No. 27365.

The A. H. Y. Color & Chemical Company will shortly move into their enlarged quarters at 44 North Fourth Street, Philadelphia, Pa.

The firm of L. B. Holliday & Co., Ltd., has been formed into a limited company with a nominal capital of $1,250,000, of which $1,000,000 has already been subscribed. They lately applied in the British Patent Courts for a license to use twenty-three German patents for the manufacture of dyestuff in the name of the Badische, Bayer, Cassella and Kalle Cos. This license was granted on a royalty fee of 2½ per cent of the final product and 1 per cent on the intermediates. The court stated that the applicant might apply again for a royalty on the weight basis if it were more advantageous.

The War Department has just approved the request of the Director of Chemical Warfare Service to furlough back to approved institutions a limited number of teachers of chemistry. This furlough will be administered by the Committee on Education and Special Training, old Land Office Building, Washington, D. C., upon recommendation of the officer in charge of university relations, Chemical Warfare Service.

The Westmoreland Chemical & Color Company, Twenty-second Street and Allegheny Avenue, Philadelphia, Pa., has awarded a contract for the reconstruction of the portion of its works recently destroyed by fire. The improvements are estimated to cost $15,000. Rush J. Whiteside & Sons, 2115 Wallace Street, Philadelphia, are the contractors.

E. W. France, director of the Philadelphia Textile School, Broad and Pine Streets, announces that the new term will open Monday, September 23, and that entrance examinations will be held Thursday, September 19. The special night course will open this year on September 30.

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In hoc signo vincimus

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The application of dyestuffs to textiles is as important as their production. The technique of this branch of the color industry has for years commanded the best talent among those dyestuff distributors who have catered to the highest class of trade.

An intimate knowledge of the possibilities of every dyestuff is often necessary to meet the particular requirements of the consumer. Dyeing is a chemical, not a mechanical, process, and the variation of local conditions, due to differences in quality of water, steam and chemicals, makes the dyehouse problem an individual one

Such problems are welcomed by the technical department of this company, which is manned by chemists who have been picked because of their knowledge, practical experience and demonstrated ability. We have long maintained well-equipped laboratories at our different offices for this purpose, and invite inquiries and extend, without any obligation on the part of our customers, our services to all who stand in need of them.

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